

December 10, 2012

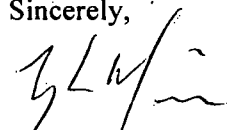
Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
901 North 5th Street
Kansas City, KS 66101

Re: The Doe Run Company – Elvins/Rivermines Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article VI, Section 56 of the Unilateral Administrative Order (UAO) (CERCLA-07-2005-0169) for the referenced project and on behalf of The Doe Run Company, the progress report for the period September 1, 2012 through September 30, 2012 is enclosed. If you have any questions or comments, please call me at 573-638-5020 or Mark Nations at 573-518-0800.

Sincerely,



Ty L. Morris, P.E., R.G.
Vice President

TLM/jms
Enclosures

c: Mark Nations – TDRC
Matt Wohl – TDRC (electronic only)
Kathy Rangen – MDNR
Tim Skoglund – Barr Engineering

07CR

40408415



Superfund

0400

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Elvins/Rivermines Mine Tailings Site
Park Hills, Missouri
Removal Action - Monthly Progress Report
Period: September 1, 2012 – September 30, 2012

1. Actions Performed and Problems Encountered This Period:

- a. Continued operating the roughing filter during the period and divert flow around the ZVI/sand filter, aeration tank, and final sand filter.
- b. Continued to take analytical samples two to three times a week during the period. Analytical results are described below and included with this progress report. It should be noted that after August 10, 2012 the roughing filter (RMP-Rough) was the only sample taken.
- c. Continued to have head loss issues within the roughing filter and its associated piping system. This is primarily occurring as a result of the metal sulfides that have been deposited in the system as a result of the treatment process.
- d. Continued efforts to bench test possible renovations to the iron/sand filter and system piping.
- e. Began work on the task of rehabilitating the western treatment ponds. This work focused on removing the existing media. As of the end of the period the media had been removed. However, during the removal of the media, the underdrain of the cell was damaged to the extent that it also had to be removed and replaced. As of the end of the period the underdrain had been replaced.
- f. Following the removal of the media and replacement of the underdrain, work began on the task of installing the organic media. This work began the week of September 10, 2012 and continued through the end of the period. As of the end of the period, it is estimated that approximately 50 percent of the media has been mixed and placed in the pond.

2. Analytical Data and Results Received This Period:

- a. Dissolved zinc levels in the pilot effluent test ranged between 0.012 mg/L and 0.026 mg/L.
- b. Total zinc levels in the pilot test effluent ranged between 0.72 mg/L and 13.65 mg/L.
- c. Iron concentrations in the pilot test effluent ranged between 0.52 mg/L and 1.91 mg/L.
- d. Total suspended solids concentrations in the system effluent were not measured this period.
- e. During this period, water samples were collected from just upstream of Old Missouri Highway 32, as well as from upstream and downstream of the confluence of the site discharge with Flat River. The analytical results for this event are included in this progress report.

3. Developments Anticipated and Work Scheduled for Next Period:

- a. Continue analytical sampling and field measurements three times a week. No WET tests are planned.
- b. Continue to operate the system with the bypass pipe.
- c. Complete monthly water sampling activities as described in the Removal Action Work Plan.
- d. Complete air monitoring activities as described in the Removal Action Work Plan.
- e. Continue bench testing secondary treatment options that could be added to the roughing filter of the pilot test.

- f. Continue renovations to the western treatment pond. These activities will focus on mixing and placing media in the pond. Once this work is completed, the distribution system will be constructed and put in place on top of the media.

4. Changes in Personnel:

- a. None.

5. Issues or Problems Arising This Period:

- a. None.

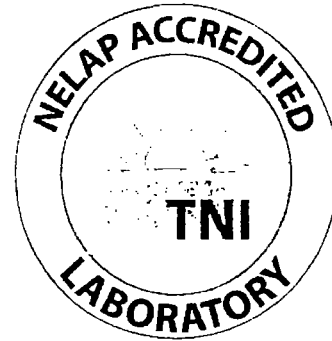
6. Resolution of Issues or Problems Arising This Period:

- a. None.

End of Monthly Progress Report

October 10, 2012

Stephen Moilanen
Barr Engineering Company
1001 Diamond Ridge
Suite 1100
Jefferson City, MO 65109
TEL: (573) 638-5035
FAX: (573) 638-5001



RE: Rivermines MTS-25/86-0009

WorkOrder: 12091377

Dear Stephen Moilanen:

TEKLAB, INC received 4 samples on 9/28/2012 10:30:00 AM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Austin".

Michael L. Austin
Project Manager
(618)344-1004 ex 16
MAustin@teklabinc.com

Client: Barr Engineering Company**Work Order:** 12091377**Client Project:** Rivermines MTS-25/86-0009**Report Date:** 10-Oct-12

This reporting package includes the following:

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Chain of Custody	Appended

Client: Barr Engineering Company**Work Order:** 12091377**Client Project:** Rivermines MTS-25/86-0009**Report Date:** 10-Oct-12**Abbr Definition**

- CCV Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
- DF Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
- DNI Did not ignite
- DUP Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
- ICV Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
- IDPH IL Dept. of Public Health
- LCS Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
- LCSD Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
- MB Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
- MDL Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
- MS Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
- MSD Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
- MW Molecular weight
- ND Not Detected at the Reporting Limit
- NELAP NELAP Accredited
- PQL Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
- RL The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
- RPD Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
- SPK The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
- Surr Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
- TNTC Too numerous to count (> 200 CFU)

Qualifiers

- | | |
|--|---|
| # - Unknown hydrocarbon | B - Analyte detected in associated Method Blank |
| E - Value above quantitation range | H - Holding times exceeded |
| M - Manual Integration used to determine area response | ND - Not Detected at the Reporting Limit |
| R - RPD outside accepted recovery limits | S - Spike Recovery outside recovery limits |
| X - Value exceeds Maximum Contaminant Level | |

Client: Barr Engineering Company**Work Order:** 12091377**Client Project:** Rivermines MTS-25/86-0009**Report Date:** 10-Oct-12**Cooler Receipt Temp:** 5.2 °C

Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	kmccclain@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2013	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2013	Springfield
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2013	Collinsville
Arkansas	ADEQ	88-0966		3/14/2013	Collinsville
Illinois	IDPH	17584		4/30/2013	Collinsville
Kentucky	UST	0073		5/26/2013	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2013	Collinsville

Laboratory Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

Lab ID: 12091377-001

Client Sample ID: RM-001

Matrix: AQUEOUS

Collection Date: 09/25/2012 12:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	500		969	mg/L	50	10/01/2012 18:30	R168849
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		7.66		1	09/28/2012 15:36	R168684
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)		5		1360	mg/L	1	10/01/2012 13:00	R168750
STANDARD METHODS 2540 D								
Total Suspended Solids		6		< 6	mg/L	1	09/28/2012 14:58	R168689
STANDARD METHODS 2540 F								
Solids, Settleable		0.1	H	< 0.1	ml/L	1	09/28/2012 14:05	R168673
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		1.2	mg/L	1	10/05/2012 16:45	R169034
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		7.20	µg/L	1	10/07/2012 1:29	82017
Zinc	NELAP	10.0	S	15000	µg/L	1	10/07/2012 1:29	82017
<i>MS QC limits for Zn are not applicable due to high sample/spike ratio.</i>								
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		9.50	µg/L	1	10/07/2012 21:59	82046
Zinc	NELAP	10.0		16300	µg/L	1	10/07/2012 21:59	82046
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00	X	10.8	µg/L	1	09/29/2012 9:05	82018
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00	X	10.9	µg/L	1	09/29/2012 16:04	82020

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

Lab ID: 12091377-002

Client Sample ID: RM-Dup

Matrix: AQUEOUS

Collection Date: 09/25/2012 13:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	200		477	mg/L	20	10/04/2012 0:02	R168909
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		8.02		1	09/28/2012 15:38	R168684
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)		5		740	mg/L	1	10/01/2012 13:00	R168750
STANDARD METHODS 2540 D								
Total Suspended Solids		6		< 6	mg/L	1	09/28/2012 14:58	R168689
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		2.3	mg/L	1	10/05/2012 16:51	R169034
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	10/07/2012 1:40	82017
Zinc	NELAP	10.0		1110	µg/L	1	10/07/2012 1:40	82017
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	10/07/2012 22:03	82046
Zinc	NELAP	10.0		1280	µg/L	1	10/07/2012 22:03	82046
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00	X	6.77	µg/L	1	09/29/2012 9:15	82018
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00		2.78	µg/L	1	09/29/2012 16:07	82020

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

Lab ID: 12091377-003

Client Sample ID: RM-US

Matrix: AQUEOUS

Collection Date: 09/25/2012 12:30

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	40		89	mg/L	4	10/05/2012 21:28	R169083
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		7.53		1	09/28/2012 15:41	R168684
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)		5		340	mg/L	1	10/01/2012 13:00	R168750
STANDARD METHODS 2540 D								
Total Suspended Solids		6		< 6	mg/L	1	09/28/2012 15:07	R168689
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		2.9	mg/L	1	10/05/2012 16:58	R169034
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	10/07/2012 1:44	82017
Zinc	NELAP	10.0		< 10.0	µg/L	1	10/07/2012 1:44	82017
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	10/07/2012 22:14	82046
Zinc	NELAP	10.0		< 10.0	µg/L	1	10/07/2012 22:14	82046
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00		4.10	µg/L	1	09/29/2012 9:18	82018
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00		< 2.00	µg/L	1	09/29/2012 16:17	82020

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

Lab ID: 12091377-004

Client Sample ID: RM-DS

Matrix: AQUEOUS

Collection Date: 09/25/2012 12:50

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	200		451	mg/L	20	10/04/2012 0:07	R168909
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		8.01		1	09/28/2012 15:43	R168684
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)		5		680	mg/L	1	10/01/2012 13:00	R168750
STANDARD METHODS 2540 D								
Total Suspended Solids		6		< 6	mg/L	1	09/28/2012 15:07	R168689
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		2.0		2.7	mg/L	2	10/08/2012 19:15	R169110
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	10/07/2012 1:48	82017
Zinc	NELAP	10.0		1100	µg/L	1	10/07/2012 1:48	82017
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	10/07/2012 22:18	82046
Zinc	NELAP	10.0		1280	µg/L	1	10/07/2012 22:18	82046
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00	X	8.08	µg/L	1	09/29/2012 9:22	82018
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00		2.82	µg/L	1	09/29/2012 16:21	82020

Sample Summary

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
12091377-001	RM-001	Aqueous	5	09/25/2012 12:00
12091377-002	RM-Dup	Aqueous	5	09/25/2012 13:00
12091377-003	RM-US	Aqueous	5	09/25/2012 12:30
12091377-004	RM-DS	Aqueous	5	09/25/2012 12:50

Dates Report

<http://www.teklabinc.com/>
Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

Sample ID	Client Sample ID	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
	Test Name				
12091377-001A	RM-001	09/25/2012 12:00	09/28/2012 10:30		
	Standard Methods 2540 F				09/28/2012 14:05
12091377-001B	RM-001	09/25/2012 12:00	09/28/2012 10:30		
	EPA 600 375.2 Rev 2.0 1993 (Total)				10/01/2012 18:30
	Standard Method 4500-H B, Laboratory Analyzed				09/28/2012 15:36
	Standard Methods 2340 C				10/01/2012 13:00
	Standard Methods 2540 D				09/28/2012 14:58
12091377-001C	RM-001	09/25/2012 12:00	09/28/2012 10:30		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			10/01/2012 9:40	10/07/2012 21:59
	Standard Methods 3030 E, 3113 B, Metals by GFAA			09/28/2012 16:18	09/29/2012 9:05
12091377-001D	RM-001	09/25/2012 12:00	09/28/2012 10:30		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			09/28/2012 15:51	10/07/2012 1:29
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			09/28/2012 18:18	09/29/2012 16:04
12091377-001E	RM-001	09/25/2012 12:00	09/28/2012 10:30		
	Standard Methods 5310 C, Organic Carbon				10/05/2012 16:45
12091377-002A	RM-Dup	09/25/2012 13:00	09/28/2012 10:30		
	EPA 600 375.2 Rev 2.0 1993 (Total)				10/04/2012 0:02
	Standard Methods 2340 C				10/01/2012 13:00
12091377-002B	RM-Dup	09/25/2012 13:00	09/28/2012 10:30		
	Standard Method 4500-H B, Laboratory Analyzed				09/28/2012 15:38
	Standard Methods 2540 D				09/28/2012 14:58
12091377-002C	RM-Dup	09/25/2012 13:00	09/28/2012 10:30		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			10/01/2012 9:40	10/07/2012 22:03
	Standard Methods 3030 E, 3113 B, Metals by GFAA			09/28/2012 16:18	09/29/2012 9:15
12091377-002D	RM-Dup	09/25/2012 13:00	09/28/2012 10:30		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			09/28/2012 15:51	10/07/2012 1:40
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			09/28/2012 18:18	09/29/2012 16:07
12091377-002E	RM-Dup	09/25/2012 13:00	09/28/2012 10:30		
	Standard Methods 5310 C, Organic Carbon				10/05/2012 16:51
12091377-003A	RM-US	09/25/2012 12:30	09/28/2012 10:30		
	EPA 600 375.2 Rev 2.0 1993 (Total)				10/05/2012 21:28
	Standard Methods 2340 C				10/01/2012 13:00
12091377-003B	RM-US	09/25/2012 12:30	09/28/2012 10:30		
	Standard Method 4500-H B, Laboratory Analyzed				09/28/2012 15:41
	Standard Methods 2540 D				09/28/2012 15:07
12091377-003C	RM-US	09/25/2012 12:30	09/28/2012 10:30		

Dates Report

<http://www.teklabinco.com/>
Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

Sample ID	Client Sample ID	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
	Test Name				
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			10/01/2012 9:40	10/07/2012 22:14
	Standard Methods 3030 E, 3113 B, Metals by GFAA			09/28/2012 16:18	09/29/2012 9:18
12091377-003D	RM-US	09/25/2012 12:30	09/28/2012 10:30		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			09/28/2012 15:51	10/07/2012 1:44
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			09/28/2012 18:18	09/29/2012 16:17
12091377-003E	RM-US	09/25/2012 12:30	09/28/2012 10:30		
	Standard Methods 5310 C, Organic Carbon				10/05/2012 16:58
12091377-004A	RM-DS	09/25/2012 12:50	09/28/2012 10:30		
	EPA 600 375.2 Rev 2.0 1993 (Total)				10/04/2012 0:07
	Standard Methods 2340 C				10/01/2012 13:00
12091377-004B	RM-DS	09/25/2012 12:50	09/28/2012 10:30		
	Standard Method 4500-H B, Laboratory Analyzed				09/28/2012 15:43
	Standard Methods 2540 D				09/28/2012 15:07
12091377-004C	RM-DS	09/25/2012 12:50	09/28/2012 10:30		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			10/01/2012 9:40	10/07/2012 22:18
	Standard Methods 3030 E, 3113 B, Metals by GFAA			09/28/2012 16:18	09/29/2012 9:22
12091377-004D	RM-DS	09/25/2012 12:50	09/28/2012 10:30		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			09/28/2012 15:51	10/07/2012 1:48
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			09/28/2012 18:18	09/29/2012 16:21
12091377-004E	RM-DS	09/25/2012 12:50	09/28/2012 10:30		
	Standard Methods 5310 C, Organic Carbon				10/08/2012 19:15

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

EPA 600 375.2 REV 2.0 1993 (TOTAL)

Batch R168849 SampType: MBLK Units mg/L
 SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		< 10						10/01/2012

Batch R168849 SampType: LCS Units mg/L
 SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		20	20	0	101.3	90	110	10/01/2012

Batch R168849 SampType: MS Units mg/L
 SampID: 12091377-001BMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	500		1480	500	968.6	102.8	90	110	10/01/2012

Batch R168849 SampType: MSD Units mg/L
 SampID: 12091377-001BMSSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate	500		1500	500	968.6	105.4	1483	0.88	10/01/2012

Batch R168909 SampType: MBLK Units mg/L
 SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		< 10						10/03/2012

Batch R168909 SampType: LCS Units mg/L
 SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		20	20	0	99.7	90	110	10/03/2012

Batch R168978 SampType: MBLK Units mg/L
 SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		< 10						10/04/2012

Batch R168978 SampType: LCS Units mg/L
 SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		19	20	0	94.6	90	110	10/04/2012

Batch R169083 SampType: MBLK Units mg/L
 SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		< 10						10/05/2012

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

EPA 600 375.2 REV 2.0 1993 (TOTAL)
Batch R169083 **SampType:** LCS **Units** mg/L

SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		18	20	0	91.0	90	110	10/05/2012

STANDARD METHOD 4500-H B, LABORATORY ANALYZED
Batch R168684 **SampType:** LCS **Units**
SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lab pH	1.00		7.00	7.00	0	100.0	99.1	100.8	09/28/2012

Batch R168684 **SampType:** DUP **Units**
SampID: 12091377-001BDUP

RPD Limit 10

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		7.66				7.660	0.00	09/28/2012

Batch R168684 **SampType:** DUP **Units**
SampID: 12091377-002BDUP

RPD Limit 10

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		8.00				8.020	0.25	09/28/2012

Batch R168684 **SampType:** DUP **Units**
SampID: 12091377-003BDUP

RPD Limit 10

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		7.53				7.530	0.00	09/28/2012

Batch R168684 **SampType:** DUP **Units**
SampID: 12091377-004BDUP

RPD Limit 10

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		8.02				8.010	0.12	09/28/2012

STANDARD METHODS 2340 C
Batch R168750 **SampType:** MBLK **Units** mg/L

SampID: MB-R168750

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO ₃)	5		< 5						10/01/2012

Batch R168750 **SampType:** LCS **Units** mg/L

SampID: LCS-R168750

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO ₃)	5		1000	1000	0	100.0	90	110	10/01/2012

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

STANDARD METHODS 2340 C

Batch R168750		SampType: MS		Units mg/L						
SampID: 12091377-004AMS										Date
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Analyzed	
Hardness, as (CaCO3)	5		1080	400	680.0	100.0	85	115	10/01/2012	

Batch R168750		SampType: MSD		Units mg/L				RPD Limit 10		
SampID: 12091377-004AMSD										Date Analyzed
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Hardness, as (CaCO3)	5		1080	400	680.0	100.0	1080	0.00	10/01/2012	

STANDARD METHODS 2540 D

Batch R168689		SampType: MBLK		Units mg/L							
SampID: MBLK											Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Total Suspended Solids		6		< 6						09/28/2012	

Batch R168689		SampType: LCS		Units mg/L					
SampID: LCS									Date Analyzed
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Total Suspended Solids	6		94	100	0	94.0	85	115	09/28/2012
Total Suspended Solids	6		91	100	0	91.0	85	115	09/28/2012
Total Suspended Solids	6		104	100	0	104.0	85	115	09/28/2012
Total Suspended Solids	6		101	100	0	101.0	85	115	09/28/2012

Batch R168689		SampType: DUP		Units mg/L				RPD Limit 15		Date Analyzed
SampID: 12091377-004B DUP										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Total Suspended Solids	6		< 6				0	0.00	09/28/2012	

STANDARD METHODS 5310 C, ORGANIC CARBON

Batch R169034		SampType: MBLK		Units mg/L							
SampID: ICB/MBLK											Date
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Analyzed	
Total Organic Carbon (TOC)		1.0		< 1.0						10/05/2012	

Batch R169034		SampType: LCS		Units mg/L							
SampID: ICB/LCS											Date
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Analyzed	
Total Organic Carbon (TOC)		10.0		62.1	59.7	0	104.0	90	110	10/05/2012	

Batch R169110		SampType: MBLK		Units mg/L							
SampID: ICB/MBLK											Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Total Organic Carbon (TOC)		1.0		< 1.0						10/08/2012	

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

STANDARD METHODS 5310 C, ORGANIC CARBON

Batch R169110 SampType: LCS Units mg/L

SampleID: ICV/LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)	10.0		62.9	59.7	0	105.3	90	110	10/08/2012

Batch R169110 SampType: MS Units mg/L

SampleID: 12091377-004EMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)	2.0		13.1	10.0	2.700	104.2	85	115	10/08/2012

Batch R169110 SampType: MSD Units mg/L

SampleID: 12091377-004EMSD

RPD Limit 10

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)	2.0		13.1	10.0	2.700	103.7	13.12	0.38	10/08/2012

EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)

Batch 82017 SampType: MBLK Units µg/L

SampleID: MB-82017

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		< 2.00	2.00	0	0	-100	100	10/07/2012
Zinc	10.0		< 10.0	10.0	0	0	-100	100	10/07/2012

Batch 82017 SampType: LCS Units µg/L

SampleID: LCS-82017

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		46.5	50.0	0	93.0	85	115	10/07/2012
Zinc	10.0		487	500	0	97.4	85	115	10/07/2012

Batch 82017 SampType: MS Units µg/L

SampleID: 12091377-001DMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		52.0	50.0	7.2	89.6	75	125	10/07/2012
Zinc	10.0		15400	500	15000	78.0	75	125	10/07/2012

Batch 82017 SampType: MSD Units µg/L

SampleID: 12091377-001DMSD

RPD Limit 20

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cadmium	2.00		51.8	50.0	7.2	89.2	52	0.39	10/07/2012
Zinc	10.0	S	15300	500	15000	64.0	15390	0.46	10/07/2012

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)

Batch 82046		SampType: MBLK		Units µg/L						Date Analyzed
SampID: MB-82046										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Cadmium	2.00		< 2.00	2.00	0	0	-100	100	10/07/2012	
Zinc	10.0		< 10.0	10.0	0	0	-100	100	10/07/2012	

Batch 82046		SampType: LCS		Units µg/L							
SampID: LCS-82046											Date Analyzed
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit			
Cadmium	2.00		49.7	50.0	0	99.4	85	115	10/07/2012		
Zinc	10.0		517	500	0	103.3	85	115	10/07/2012		

Batch 82046		SampType: MS		Units µg/L						
SampID: 12091377-002CMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Cadmium	2.00		49.7	50.0	0.7	98.0	75	125	10/07/2012	
Zinc	10.0		1810	500	1282	104.8	75	125	10/07/2012	

Batch 82046		SampType: MSD		Units µg/L				RPD Limit 20		
SampID: 12091377-002CMSD										Date Analyzed
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Cadmium	2.00		49.7	50.0	0.7	98.0	49.7	0.00	10/07/2012	
Zinc	10.0		1820	500	1282	108.6	1806	1.05	10/07/2012	

STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA

Batch 82018		SampType: MBLK		Units µg/L						
SampID: MB-82018										Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lead		2.00		< 2.00	2.00	0	0	-100	100	09/29/2012

Batch 82018		SampType: LCS		Units µg/L						
SampID: LCS-82018										Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lead		2.00		15.4	15.0	0	102.5	85	115	09/29/2012

Batch 82018		SampType: MS		Units µg/L						
SampID: 12091377-001CMS										Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lead		2.00		24.6	15.0	10.7891	92.1	70	130	09/29/2012

Batch 82018		SampType: MSD		Units µg/L				RPD Limit 20			
SampID: 12091377-001CMSD										Date Analyzed	
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Lead		2.00		22.9	15.0	10.7891	80.9	24.5984	7.06	09/29/2012	

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)

Batch 82020 SampType: MBLK Units µg/L

SampleID: MB-82020

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		< 2.00	2.00	0	0	-100	100	09/29/2012

Batch 82020 SampType: LCS Units µg/L

SampleID: LCS-82020

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		14.9	15.0	0	99.0	85	115	09/29/2012

Batch 82020 SampType: MS Units µg/L

SampleID: 12091377-002DMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		16.5	15.0	2.7827	91.3	70	130	09/29/2012

Batch 82020 SampType: MSD Units µg/L

SampleID: 12091377-002DMSD

RPD Limit 20									Date Analyzed
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	
Lead	2.00		16.7	15.0	2.7827	92.5	16.4723	1.13	09/29/2012

Receiving Check List

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12091377

Client Project: Rivermines MTS-25/86-0009

Report Date: 10-Oct-12

Carrier: Ron Korte

Received By: BSJ

Completed by:

On:

28-Sep-12

Timothy W. Mathis

Reviewed by:

On:

01-Oct-12

Michael L. Austin

Pages to follow: Chain of custody

Extra pages included

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>	Temp °C 5.2
Type of thermal preservation?	None <input type="checkbox"/>	Ice <input checked="" type="checkbox"/>	Blue Ice <input type="checkbox"/>	Dry Ice <input type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
All samples received within holding time?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Reported field parameters measured:	Field <input type="checkbox"/>	Lab <input type="checkbox"/>	NA <input checked="" type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water - at least one vial per sample has zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials <input checked="" type="checkbox"/>
Water - TOX containers have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No TOX containers <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
NPDES/CWA TCN interferences checked/treated in the field?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>

Any No responses must be detailed below or on the COC.

Samples received did not meet hold time requirements for Settleable Solids analysis. Client was notified of this exceedence via work order summary.
TWM 9/28/12

Teklab Chain of Custody

Pg. ____ of ____

Workorder 12091377

5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618)344-1004 ~ Fax:(618)344-1005

Are the samples chilled? ☒ Yes ☐ No with: ☒ Ice ☐ Blue ice

Preserved in ☒ Lab ☐ Field

Cooler Temp 5.2 Sampler SBM

MO 65109

Comments

Invoice to Mark Nations. Results to Allison Olds and Mark Nations, mnations@doerun.com.
Matrix is surface water.
Metals: Cd, Pb, Zn

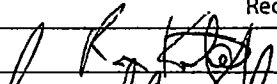
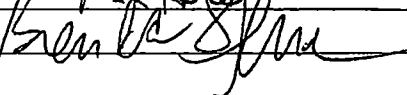
eMail aolds@barr.com

Phone 573-638-5007

Requested Due Date Standard

Billing/PO Per contract with Doe Run

Sample Date/Time	Preservative	Matrix	pH	T.S.S.	Sulfate	Settleable Solids	T.O.C.	Total Metals	Dissolved Metals	Hardness				
9-25-12 12:00	Unpres	Aqueous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9-25-12 13:00	Unpres	Aqueous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9-25-12 12:30	Unpres	Aqueous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9-25-12 12:50	Unpres	Aqueous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Unpres	Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Unpres	Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Unpres	Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Unpres	Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

y *	Date/Time	Received By	Date/Time
	9-25-12 16:00		9/28/12 845
	9/28/12 10:30		9/28/12 1030

half of client acknowledges that they have read and understand the terms of this agreement and that they have the authority to sign on behalf of client.